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ABSTRACT

As Boston and other cities across the nation enter a second decade of education reform, the attention of school and community leaders, as well as of parents, is turning to the learning potential provided by after-school hours. This paper explores the potential role of project-based and experiential learning in transforming the learning opportunities in the after-school setting. Section 1 of the paper reviews current debates over the "what" and "how" of learning in the after-school hours and describes project-based learning and why it is desirable from the point of view of children, their teachers, mentors, and parents, as well as from the perspective of learning theorists and researchers. Section 2 focuses on effective practices, providing snapshots of several after-school projects nationwide and in Boston and unpacking these to arrive at "symptoms" or criteria of effective projects. Section 3 takes up the challenges of incorporating these learning strategies successfully into the after-school hours, in particular examining what it will take to help Boston after-school staff in this effort. The paper points out that the conceptual and practical challenges involved in moving Boston's after-school settings toward a culture of learning and a sustained curriculum of "project-like" experiences for children from 5 years to adolescence are formidable. The paper concludes with recommendations for action and for further study within the next 2 years in Boston. Seven appendices include a list of individuals interviewed; a list of relevant publications, Web sites, and videos; and a 14-item bibliography. (KB)

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Project-Based and Experiential Learning in After-School Programming

Project Zero, Harvard Graduate School of Education

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A Report Commissioned by
Boston's After-School for All Partnership
Learning Goal Research
September, 2002

Project-Based and Experiential Learning in After-School Programming

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Project Zero
Harvard Graduate School of Education

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Executive Summary

As Boston and other cities across the country enter a second decade of education reform, the attention of school and community leaders, as well as of parents, is turning to the learning potential of the after-school hours. After all, children and youth spend only six of their waking hours each day in classrooms. The recognition that schools alone cannot produce the range of competencies, attitudes and personal qualities young people need has led to a period of unprecedented support for increasing the quality and quantity of opportunities for learning available to young people, from early childhood through high school.

There is considerable debate, however, on the best approach to transforming the learning opportunities in the after-school setting. Many advocates of project-based learning cite the unique possibility of meeting both academic and enrichment goals through the active learning experiences of product, performance, and/or service oriented projects. Building on the long history of project-based learning, these advocates also identify the role of project work in helping students develop essential skills required in school and work settings: the ability to do sustained work over time; skill in collaborating with others; problem solving and critical thinking in the midst of complex activities; and attention to process as well as product.

Many serious challenges face after-school staff interested and ready to begin to implement project work in their centers, including achieving clarity about and a clear vision of the approach, developing the skills and attributes of good project facilitators, identifying ways of integrating projects into the many other activities of their centers, and sustaining their focus on these complex activities over time as they develop the requisite experience and expertise. The efforts of individual centers would be significantly enhanced and far more likely to succeed with systemic supports. In this paper, we suggest a number of ways in which Boston could begin to provide this much-needed support. These include establishing a central site (most likely a space in a larger center for support of after-schools in Boston) for resources and documentation of project-based learning, an Educational Coordinator and a team of Educational Specialists working with individual centers across the city, innovation grants, and supports for partnerships between after-

schools and other organizations. Finally, we suggest some targeted efforts to raise the level of conversation about learning in the after-school setting through a series of events and publications.

Overview

In this paper, we explore the potential role of project-based and experiential learning in that effort. In the first section, we provide some context by reviewing the current debates over the "what" and "how" of learning in the after-school hours. We then describe what project-based learning might look like and why it is desirable, from the point of view of children, their teachers, mentors and parents, and from the perspective of learning theorists and researchers. Section two focuses on effective practices: providing snapshots of several after-school projects and unpacking these to arrive at "symptoms" or criteria of effective projects. Section three takes up the challenges of incorporating these learning strategies successfully into the after-school hours – in particular examining what it will take to help after-school staff in this effort. Finally we end with recommendations for action and for further study.

Context

Debate Over the "What" and "How" of Learning in the After-School Hours

While there is considerable agreement that the after-school setting provides an important opportunity for learning, there is still significant disagreement over the content and style of learning most appropriate to those hours and that environment. Three basic questions of curriculum, instruction, and assessment hang over the commitment to make after-school a learning opportunity for children:

- What should be taught?
- How should it be taught?
- How can we know what children are learning and whether we are effective as their teachers?

These remain fundamental questions in regular school settings, where people continue to disagree over the appropriateness of extensive curriculum frameworks and state mandated tests as well as about the best strategies to teach anything from literacy to numeracy, from languages to the sciences. In after-schools, where teaching and learning is just coming onto the agenda, it is especially challenging to address these larger questions of curriculum, assessment and instruction.

As new after-school centers are established and older ones expand their services, parents, teachers, community leaders, and after-school staff are entering into serious conversation over just what can and should be done to provide these educational experiences. Determining appropriate and achievable goals for learning in after-school settings is a difficult task. In our research, after-school providers raised a number of important and fundamental questions regarding these issues:

- What are the best ways to focus on the learning needs and interests of these children?
- Should the after-school become four more hours of traditional schooling or are there other and more appropriate approaches to learning in the after-school setting?
- How can the after-school be an opportunity to provide very different kinds of learning experiences for these children, many of whom have struggled within the models of traditional public school curriculum and instruction?

As these questions reveal, the after-school field is divided by a continuing debate as to whether learning in the after-school hours should focus on addressing academic needs or on providing enrichment experiences, more like those available to middle class children, whose parents can pay for music and art classes, summer camps, and supplementary educational services such as private tutoring. Certainly there is considerable evidence that many of the young people in Boston who are the target population for after-school programming are in great academic need. The extraordinary number of children in Boston demonstrating considerable academic distress is evident in low scores on the MCAS tests and high retention and drop-out rates. These are generally the poorest of Boston's children and many are African-American, Latino, or new immigrants to the U.S. The structures of the school day and the resources of our public schools are such that the academic needs of many

of these children are not being adequately served within the six hours of the standard school day. Yet, the structures and resources of many after-school settings are also severely limited.

We found competing agendas for the form and focus of after-school learning, even among its many advocates. In interviews with after-school leaders and staff we heard three major strategies for how to use the after-school hours for learning:

1. homework help and test preparation activities;

2. targeted tutoring or small group work on specific areas of academic need;

3. project-based and experiential learning.

Not surprisingly, the more the children in a particular after-school or community were perceived as being at risk of school failure, the more homework, test preparation, and tutoring were cited as priorities. For children who appeared to be more successful at school, after-school was seen as a place for learning experiences that were decidedly different than those most common in school. So, after-school providers often appear to be struggling with choices between reinforcement or enrichment, doing "more" or "something different," attending to the unfinished work of the school day or providing children with a unique set of learning experiences.

We believe that, especially in the abstract, these are falsely dichotomized choices. Indeed, most children are likely to need multiple kinds of learning opportunities. Many children in after-school settings, whether succeeding or failing in the regular school, still need help with homework, either because adequate support is unavailable at home or other responsibilities or distractions make the after-school hours the best – or only time – to complete those assignments. While after-school programs cannot be held responsible for teaching what has not been taught in the regular school day, it is possible that the smaller scale and often more relaxed atmosphere of the after-school can be a very powerful environment for working through particularly challenging aspects of academic learning.

At the same time, we don't believe that the academic needs of any child should ever keep them from participating in project-based and experiential learning. Indeed, we have found that the hope some providers hold for

project-based and experiential learning is that these strategies will give them a way to address simultaneously the academic and enrichment needs of the youngsters they serve.

Young people desire – and deserve – opportunities to be engaged in challenging, sustained, productive group experiences. As pressure mounts on schools to show yearly test-score gains on high stakes state assessments of academic content, knowledge, and skills, teachers are finding it increasingly difficult to find the time and other resources to incorporate project-based learning into the school day. For many children and youth, after-school represents an opportunity to engage in more active learning strategies.

Determining the needs of a particular group of children and designing a learning program that addresses those needs is not a simple or obvious task. It is likely to lead to programs that are flexible, require diverse resources (including, for example, specialists who can help with specific or difficult subject matter), and that incorporate all of these elements over a day, a week, or a term. We do not believe that any child should have a steady diet of one particular style of learning.

At the same time, we see no conceptual reason why projects cannot simultaneously serve both academic and enrichment goals. Indeed, quite the opposite seems the case – projects provide a setting in which numerous academic, intellectual, social, and meta-cognitive needs can be addressed. These goals are ambitious, but achievable if they are explicit and if after-school staff are well supported in developing their skills in designing and facilitating this kind of project work.

Even though "project-based learning" has been part of the educational scene in an explicit sense for over 80 years, we still wait for rigorous, longitudinal studies of the outcomes of sustained experiences in project-based learning environments – an indication that project-based learning, though it never seems to disappear, remains marginal in mainstream educational practice. Yet, there is abundant, though scattered, evidence that learning to carry out projects well can help students develop skills and understandings that many consider essential for success in the regular school day as well as in the world outside of school.

These skills and understandings include:

- the ability to do sustained work over time,
- skill in collaborating with others,
- problem solving and critical thinking in the midst of complex activities,
- and, attention to process as well as product.

Perhaps most importantly, project-based learning offers students the opportunity to discover that learning in a formal setting can be interesting and stimulating, that everyone can bring expertise and insight to the group, and that work and learning can be fun. This notion that projects develop skills and understandings about how to learn as much as about specific content and that "learning how to learn" is a key to success in school and later life is essential to the argument for engaging in project-based learning in the after-school. Schools have teachers trained in content areas to "cover the curriculum." How well this is done is, of course, a matter of debate. Part of the rationale for project-based learning in the after-school is that, while after-school staff often do not have training and expertise in established content areas, they can develop the necessary capacities to help students, through project-based experiences, amass the kinds of skills and understandings noted above that form the foundation for success in school.

Project-Based Learning: A Broad Definition

Advocates for project-based learning report that they frequently encounter an array of conflicting responses to their call for this approach to learning and teaching. They report hearing that "we already do that" and "we can't do that because we don't have the time (or space or expertise or resources, etc.)." People doing project-like work will say they don't do projects and others doing work that seems hardly project-like at all may call what they do project-based. All too often conversations about project-based learning bog down in a morass of confusion and misunderstandings.

We believe it is necessary first to have clarity as to the fundamental pedagogical principles underlying both project-based and experiential learning. We have found that when practitioners lack this clarity, they often feel confused and defensive about "another new thing" being foisted upon them, and they puzzle over how, for example, project-based learning relates to experiential

learning, how either of those relates to service learning, and so on. If the field is to move forward in this work, a first step is to identify characteristics and strategies shared by most project-based learning activities and how, as a whole, they contrast with traditional classroom practice. (See pages 22-24 in the Effective Practices section of this paper where we will explore further the particular qualities of project based and experiential work.)

While many definitions of project-based learning have been articulated, there is no absolute standard. This simply isn't a narrow kind of educational activity. This diversity and flexibility is both a strength of project-based work and a problem – people often don't know if they are "doing project-based learning" or not. We argue in this paper that it may be most useful to think of any particular curricular plan as being more or less "project-like." This, we believe, allows a far more flexible notion of what a project is. The impulse to explore non-traditional approaches to teaching and learning can manifest itself in countless forms. Our intention is to provide a framework or perspective that embraces that impulse and, we hope, provides some guidance for those who might want to move toward more project-like work.

Nonetheless, we can identify some of the key elements of this approach to curriculum and instruction. To that end, we believe project-based learning is most-often characterized by:

- a series of activities with a sustained focus over time and linked to an outcome of significance – a performance, product, or service that is highly valued by the students as well as a broader community,
- a group effort that often moves beyond the walls of the classroom or after-school, into the community for research, internships, presentations, etc.,
- clear learning goals that often embrace academic, social, and meta-cognitive dimensions simultaneously,
- assessment that is on-going with frequent opportunities for students to receive and provide feed-back as the work is developing as well as final evaluation from peers, instructors, and the public , including self-assessment.

Three projects from after-school settings

1. *A Songwriting Project: Everyone loves songs, but few children listen to them with the idea of writing one. In this project, children collect and listen to many different kinds of songs and begin to explore what makes a song a song and what makes some songs especially wonderful. They find people who write and/or sing songs to interview about how they do it and what makes some songs so good. Then they put themselves to the test and, working in small groups, write their own songs – about their after-school, their neighborhood, daily life, romance, and whatever else they come to think songs are good for expressing. Finally, they perform for the rest of the after-school and their parents.*
2. *The Community Museum: With partners from a local museum, children explore the museum, consider what museums are for, and decide what kinds of collections they could create to exhibit for the education and enrichment of their community. In one center, they decided to make a Community Museum exhibit. Building on their own memories and reflections, interviews with long-time residents, and photographs they took and gathered, the children created a complete display on the history and current life of their neighborhood. It was opened to the public and children became the gallery guides, leading tours, answering questions, and accepting compliments and suggestions.*
3. *The Boat Race: Exploring what kinds of materials float and sink and what conditions are basic to understanding density. This phenomenon of the natural world can be explored with products easily obtained – basins, water, and a variety of materials for making boats. Making boats is, indeed, one goal of this project and winning the boat race or getting a prize for most elegant or original design that will be held at the end is a further motivation. But working together to understand why things float or sink and to design efficient floating vehicles is another. Having fun is yet another. All three seem to happen at once in this project.*

Should these characteristics seem too broad, let's say what project-based learning is not or, alternately, what is so un-project-like as to not be a project at all. Project-based learning is not characterized by students sitting at desks, passively receiving information from teachers who are at the front of the room talking. Rather, teachers act more like facilitators, coaches and collaborators than the controllers of all decisions and, ultimately of the outcomes of

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the work. Project-based and experiential learning build on the notion that children are capable intellectually and socially of learning what they need to learn, but that they must have the opportunity to take an active role in their own learning. From this perspective, they are not "empty vessels" waiting for knowledge to be poured into them, nor are they "skill machines" who grow academically by accruing, year after year, a set of requisite capacities, definitions, formulas, and facts.

The Case for Project-Based Learning

From a Child's Perspective: "When We Can Really Live"

It is hard to sit still for too long. The "transmission" model of instruction, as overwhelmingly dominant today as it was fifty years ago, requires children to sit still for hour after hour during the school day. Children of all ages want to move about, interact, mess around, play, work hard at things that seem interesting and important, and find form and meaning in the inexplicable and seemingly incoherent or irrational aspects of the world around them. As children grow up, these desires do not abate, though many young people conclude that they can not expect to be able to pursue these interests in school.

When the school day ends, most children long for more physical freedom and a chance to play. Many seek the opportunity to be in smaller groups of peers and to interact with other children, both younger and older than they are. Within the limits of their resources, most young people make an effort to pursue whatever is of particular interest to them in their after school hours. As they get older, the relevance of any learning activity to a broader world becomes increasingly important. Youth need to see a reason for what they are doing and learning and need to feel that these activities are of value beyond the walls of the classroom. Thus the opportunity to get involved in a project – designing, building, researching, helping, entertaining, or otherwise solving problems and creating new things – can be attractive to children of all ages. It encourages them to be active agents in their own learning and it allows them to move around – physically, socially, and intellectually.

In the Foreward to Katz and Chard's Engaging Children's Minds: The Project Approach, Mary B. Lane speculates from a child's perspective on the differences in learning – and living – both in and out of school:

The emphasis placed on the development of social competence of young children by suggesting that they learn by interacting with their own firsthand experiences and with their real environment is not a new idea. However, this book is a much-needed reminder that workbooks, patterns, and cutting and tracing lines is largely a waste of children's time. More importantly, such activities are teaching the 5-year-old that school is a dull place, having little in common with real life. It is not accidental that many children's zest for "going to school" at 5 years has been replaced, at age 8 or 10, with boredom and with children separating school hours from after-school hours "when we can really live" (Katz and Chard, ix).

From an Adult's Perspective: "A lot less lecturing and a lot more doing"

Many adults recognize, as they reflect on their own learning experiences, that their favorite and most significant learning took place not only in the context of formal (schools, seminars, workshops, etc.) settings, but also often in more informal (community groups, home, camps, etc.) learning environments. So, while many stakeholders in the enterprise of education – teachers, parents, mentors, administrators, policy makers, and funders – recognize that projects are complex to design, structure, and implement, they also know, from their own experience, that projects can provide opportunities for very powerful learning.

Projects can be especially difficult to carry out within the structures and parameters of the school day – the limited time frame of the class period, typical class sizes, and the difficulty in ordering appropriate "just-in-time" materials. Increasingly, advocates of project-based and experiential learning are looking to the after-school as an excellent setting for this type of work.

Traci, an after-school teacher at a Boston public elementary school, articulated what can be most enjoyable about watching her students at work on projects:

You should see children being very self-directed. You should see the teacher...acting as coach. You should see...a lot of peer collaboration going on. You should see maybe a lot of materials and different information available for the students. I think it should be a very relaxed atmosphere where the room is basically being run by the students. I think that would be an ideal project. Where an observer sees a lot less lecturing and a lot more doing (Goodrich et al, 1995, p. 2).

From a Learning Theory and Research Perspective: "Connecting Hands and Minds"

Since William Heard Kilpatrick, a contemporary and colleague of John Dewey's, Professor at Teachers College in New York, and the man considered to be the "father" of project-based learning, first articulated the premises of this approach in 1918 (Lagemann, 2000), advocates have made the case that projects are a natural context for significant inquiry and learning. Kilpatrick, Dewey, and later advocates have linked the processes of planning, inquiring, doing, and making – connecting hands and minds – as inextricable elements of the learning process.

It is important to note that although project-based and experiential learning have long been a part of some teachers' repertoires, little direct research can be found on the broad effectiveness of project-based curriculum, especially in after-schools. Overall, examples of this kind of work tend to be transitory and homegrown and there has been little or no money to support comprehensive efforts to examine the benefits of those examples that do exist. Yet, in Lane's valuable foreward to Engaging Student Minds: The Project Approach, she argues that, while more research is certainly needed, Katz and Chard's approach to project-based learning is "buttressed by sound and thorough research in many interrelated areas: normative and dynamic dimensions of development, learning theory, motivation, and communication" (Katz and Chard, ix).

In 1989, Katz and Chard provided perhaps the most developed articulation of the principles and possibilities of project-based learning to date, though their work was focused on the early childhood years. Their explanation of the roots of their own commitment to this approach echoes what we heard from many of our interviewees as well as our long-standing interest in this approach at Project Zero. Katz and Chard write:

Our advocacy of the project approach is rooted in our own values and ideas concerning the aims of education in the early years. An overall aim of this approach is to cultivate the life of the young child's mind. In its fullest sense, the term mind includes not only knowledge and skills, but also social, emotional, moral, and aesthetic and spiritual sensibilities.

An appropriate education for young children should address the full scope of their growing minds as they strive to make better sense of their experiences. It encourages them to pose questions, pursue and solve puzzles, and increase their awareness of significant phenomena around them (pp. 5-6).

In the past two decades, however, numerous theories and practices have emerged that suggest a powerful link between project-based work and what we now understand about how learning happens. As previously noted, considerable work has been done in recent decades to explore the link between knowing and doing. The investigations of cognitive scientists, such as Lauren Resnick, Howard Gardner, and Ann Brown, have led to deeper understanding of how people construct knowledge and discard old misconceptions, the circumstances under which learners can transfer and use something learned in one setting to a new situation, the importance of context in the process of learning, and indeed in the very definition of intelligence.

Humans have diverse ways of making sense of the world, of coming to understand complex phenomena. This diversity is a blessing of the human condition; it makes life endlessly interesting. As we express and use what we know or think we know in diverse ways, we come to know those things more deeply and thoroughly. This is the root of art-making, advanced work in mathematics, and the sciences, as well as all aspects of design. Yet traditional schooling overwhelmingly favors just a few modes of thinking and communicating, notably linguistic and logical/mathematical. Young children who primarily come to significant understandings through active exploration and expression in other and different modes of thinking and doing are generally not rewarded for their individuality in school settings.

Theoretical work in the realm of intelligence, notably Gardner's articulation of a Theory of Multiple Intelligences (1983), has provided both a powerful argument against standardized teaching and testing and compelling insights into the highly individual nature of learning. The theory argues that there are eight "intelligences," each a powerful way of experiencing, making sense of, and expressing meaning and understanding. Further, Gardner acknowledges that intelligence is culturally bound – capabilities highly valued in one culture may have little or no status in other cultures. Most young people figure out well before high school that what is considered intelligent behavior in school is often quite different from what is valued outside of school. Many young people labeled as failures in school are often recognized as having considerable "street smarts" and do well for themselves in complex and demanding situations. Even more formal out of school activities demand varied kinds of excellence and intelligence, including that demonstrated on athletic fields, on stage, or in the world of work. Project work, in school or the after-school, provides young people with settings in which many different ways of knowing and making sense of the world can be valued and appreciated as critical to the success of the group's work. Clearly, projects in the arts are excellent examples of this.

Finally, we understand more now of the social nature of learning, both how we learn "with and through the ways of learning of others" and how we need others to create adequate collective knowledge and skills to solve complex problems and make wonderful, innovative products (Reggio Children/Project Zero, 2001). Again, athletics and the arts are settings which almost always demand collective effort, even in the cases of solo arts or sports events which still require feedback, support, collegiality and a sense of community.

The National Research Council recently published a study that draws on a broad knowledge base and provides an interdisciplinary synthesis of features of "positive developmental settings," gleaned from a cluster of related youth fields. This report draws on research on adolescent development, the personal and social "assets" associated with positive life outcomes, and on the outcomes of community program participation.

Their list includes a number of characteristics that are found in high quality project-based learning:

- the need for safe, structured places for learning with links to basic services (without which learning can't happen);
- high quality instruction;
- personal attention;
- strong, respectful relationships with adults;
- culture of peer support;
- clear rules, high expectations;
- rigorous yet supportive assessments;
- challenging experiences and opportunities for self-direction, participation, and contribution within the organization and the community. (Eccles & Gootman, eds., 2002, pp. 90-91)

In interpreting this report, Karen Pittman, Executive Director of The Forum for Youth Investment, sees youth development and educational practices coming together. In the face of major economic shifts that put a premium on educational experience and credentials, youth development researchers and practitioners are increasingly concerned about expanding learning opportunities and showing the impact of informal learning on academic as well as developmental outcomes. At the same time, many educators are deeply concerned about young people's lack of motivation in connection to school. This is leading to a convergence on learning as a goal and on defining and creating richer opportunities for learning both inside and outside of school.

Some Goals for Learning Through Projects

Drawing from the perspectives of children, adults, and learning theorists, it is possible to construct some ambitious, but reasonable, goals for children's learning through projects in after-school:

- To link fun and playfulness with serious work and learning, often with a community service aspect to the effort.
- To provide a natural social context for learning by bringing children into relatively small working groups within which they must pool knowledge and theories to achieve the group's goals. It is in these groups that students

can think aloud and learn next to and through other's ways of learning and solving problems.

- To provide students with experiences in which literacy and numeracy are essential elements and are integrated into meaningful efforts to figure things out, make things, and solve problems. (These experiences are not meant as a substitute for all other approaches to teaching those who aren't literate how to read, yet they can still be critically important for contextualizing reading as an essential and valuable skill.)
- To help students build an image of themselves as capable of learning what they want and need to learn, doing and achieving things they never thought possible, and working in libraries, on the web, and with others to accomplish complex tasks. These are lessons critical to becoming a successful life-long learner and a productive contributor to one's community (whether at work, at home, in one's neighborhood, or in broader communities).
- To provide students with opportunities for experimentation, self-correction, and, most importantly, reflection on not just "what" they are learning, but on "how" they learn.

Effective Practices

In this section, we look at the characteristics of practices and programs that make strides in achieving the goals laid out above and cite some of the best and/or most promising practices and models we have identified.

While we did hear consistent themes in what draws after-school educators toward project work, we also identified a challenge that has influenced what we offer in this section. A critical obstacle to implementing and/or deepening project-based work in after-schools is widespread confusion about just what is meant by this term. We have tried to provide here a number of ways for after-school educators to "locate" their work in relation to the rather loosely defined realm of "project-based learning."

What Makes a Good Project?

There is no industry standard for what a project is or even what a high-quality project looks like. In this case, the "industry" is more a "cottage industry" than a federally regulated one. On the one hand, this is probably

good, leading to healthy debate and innovation. On the other hand, it leads to confusion and makes it especially difficult for many after-school staff who would like to do project work to get a good, clear picture of what high quality project work might look like and how to pursue that image as a goal with their children. In the scant, though interesting, literature we found on project-based learning and in the interviews and focus groups we conducted, we found that definitions abound, but none are absolute or entirely shared.

We choose not to "pinpoint" a definition of project-based learning and work. Rather we offer suggestions of what projects can be in an educational setting and what a project "approach" might mean for after-schools. Further, we take the view that there is no useful orthodoxy in terms of what is or isn't a project. Instead, as noted earlier, we have discovered that various learning experiences designed for children are more or less "project-like." In other words, our hope is that identifying characteristics of project work might help after-school staff determine how "project-like" a particular experience has been and ways in which they might make future experiences more project-like, should they choose to do so. In addition, we articulate principles that seem to underlie excellent project work. Again, we hope that these will serve as a useful resource to those new to project work, and that those advocating project work will be able to have better, clearer conversations about what might be most appropriate and possible to practice in particular settings with specific groups of children.

Toward Some Defining Parameters; Or, How Would I Know a Project if I Saw One?

Earlier, we identified four key characteristics of project-based learning. Katz and Chard offer a very useful, more specific articulation of what makes a "project."

We use the term project to refer to an in-depth study of a particular topic, usually undertaken by a whole class working on subtopics in small groups, sometimes by a small group of children within a class, and occasionally by an individual child. The key feature of a project is that it is an investigation – a piece of research that involves children seeking answers to questions they have formulated by themselves or in cooperation with their teacher and that arise as the investigation proceeds (Katz and Chard, p. 2).

They go on to offer their perspective on what characterizes a "project approach." This notion of a project *approach* is shared by Noam, et. al., "Project-based learning is less a type of curriculum that can be classified according to structure and content than an approach..." (italics added, 42, LBS). Though Katz and Chard frame their perspective in relation to early childhood education, we believe they capture many of the highest aspirations we hold for project work and those we heard articulated by our interviewees, such as Steven Levy, elementary teacher, author, and outspoken advocate of project-based learning.

...project work as an approach to early childhood education refers broadly to a way of teaching and learning, rather than to a particular set of teaching techniques, or invariable sequences of activities, routines, or strategies. This approach emphasizes the teacher's responsiveness to the individual children as well as the whole group in her class. On the basis of her special knowledge of the children, she can encourage them to interact with people, objects, and the environment in ways that have personal meaning for them. As a way of learning, the project approach emphasizes children's active participation in the planning, development, and assessment of their own work; children are encouraged to take initiative and responsibility for the work that is undertaken (Katz and Chard, p. 3-4).

Qualities of Project-Based Work

Gail Breslow, Director of the Intel Computer Clubhouse Network, developed in conjunction with the Media Lab at MIT, suggested that project-based work is characterized not so much by the details of the project but by the process itself. Below, we offer a broad list of qualities, design elements, and even the "spirit" that characterize project-based work in educational settings.

Engagement

- Kids are engaged and committed to what they are doing.
- When projects are underway, the center often has the feel of an "artist's studio" or an "inventor's garage" (Gail Breslow, Interview). There is a sense that everyone is working hard but, simultaneously, with a quality of playfulness and fun.
- It takes place over a period of time and involves multiple steps.

Authenticity

- The group shares a commitment to making something, solving a problem, and together facing all of the challenges they meet along the way. Students and teachers feel part of something bigger than themselves, something of consequence, something that truly matters to themselves and others.
- Ideas for projects can come from many sources: the interests and expertise of teachers, students, parents or other members of the community; a problem faced by the group or community; a concern or confusion felt by members of the group; a desire to contribute to the quality of life in the community; the demands on students to master certain kinds of academic subject matter; and many more sources.
- Projects often force the group to move out beyond the walls of the classroom or after-school setting to seek additional resources, find needed information, or engage others with special expertise in the work.

Knowledge Generation

- In addition to designing, doing and making, there are explicit elements of inquiry and research involving the gathering of information, perspectives, theories and then analyzing those and making new hypotheses and interpretations. This research is integrally connected with the success of the project.
- The individuals in the group share their knowledge and expertise, building a knowledge in the group that is often greater than that in any one member (including the teacher!).
- Projects often evolve into new projects. A small play may evolve into a video. Designing toys for the younger children may evolve into designing play structures or even playgrounds.

Collaboration

- Students and teachers are collaborating; working as a group, but with each person taking specific roles at different points in the process.
- Roles and responsibilities are both explicit and evolve over time as various participants demonstrate special interests and expertise. In this way, projects allow expertise to emerge and develop.

Academic Reinforcement

- Time is taken to help each member of the group practice and develop reading, mathematics, and any other academic skills they encounter in the natural course of the project, instead of having those with skills (like the adults) do that work for the group.

Ongoing Assessment

- Group and individual assessment is a crucial element of making sure the project progresses well, stays on track, reaches its goal with everyone as an active, respected and appreciated participant.
- Assessment is also a key to students' reflecting on their own learning and to their learning about themselves as learners.
- The work and learning of the project are shared with others.

The Meta-Cognitive Curriculum: Learning About Self and Others as Learners

One of the least obvious but most important benefits of project-based learning is the opportunities it affords children to learn about themselves as learners. In our interviews and through other experiences with after-school staff members, we have heard staff explain that one of their primary learning goals for children in their settings, especially children beginning to turn-off to school, is that they are smart and capable and can enjoy learning. Indeed, Blythe and many others emphasize the primacy of fun in project-based learning as both an essential quality and, implicitly, an essential lesson – learning can be pleasurable (Blythe, in press). These are not trivial lessons. Research on motivation suggests that children who have concluded that they are not "smart" lose hope and give up on school, learning, and themselves. Unfortunately, far too many students are coming to this conclusion.

The desire to provide experiences that counteract this conclusion by children seems quite reasonable and a significant goal for the after-school setting. Yet, beyond encouraging words and generous helpings of positive feedback, how can after-school staff deeply affect these very negative self-images? We believe that explicit conversation about intelligence and self-worth is important and can be very helpful, but those conversations must be embedded in repeated experiences of being engaged in successful, complex learning situations in which there is ambition, challenge, frustration, confusion, perseverance,

and triumph. But still this is not enough. After-school staff have to provide students with or help them create documentation of these experiences, so the story of this work and learning can be viewed and reviewed, time and again. Students need to provide details to this narrative and need opportunities to tell/show their story repeatedly to friends, supporters, and strangers in order to reinforce both the content and the fact of their learning.

While many after-schools may keep informal forms of documentation (snapshots on the wall, even scrapbook albums, for example), few keep significant and sustained documentation with intentionality over the course of a project. This kind of documentation is not easy or obvious to produce. Yet even very early efforts at documentation communicate the message to children that both the content and the story of their learning is interesting, worth recording, and worth revisiting. If the after-school staff not only celebrate that story, but also seek to learn from it themselves, the children will be even more impressed with the significance of their commitment and its outcomes.

A Continuum from Less to More Project-Like Work

In Learning Beyond Schools, Noam, et. al, identify four curricular options available to after-school educators interested in project-like work: prepackaged curricula, scaffold curricula, activity-based curricula, and project-based curricula. They suggest that these four options can be placed in a matrix between pre-defined "structure" and pre-defined "content." In their analysis, project-based curricula emerges as "low" in both pre-defined content and structure. Of course, high-quality project work is built on very careful and well considered structures and serious and significant content, but these are rarely determined by anyone outside of the after-school center itself or entirely in advance of implementing the project. Indeed, in many projects, the structure and content are fully negotiated by children and adults and evolve during the course of the experience. This is one of the "real world" qualities referred to by many advocates (Steinberg, 1998).

In the box below, we map some of the qualities of project work in the hope of helping after-school staff locate themselves along a continuum of "project-like" work and to discover ways of making their work more "project-like." This continuum does not explicitly include all of the qualities in the earlier list, but we have included some of them as a kind of indicator of how this sort of continuum could be used and elaborated.

Characteristics of work that is LESS project-like:

1. Entirely teacher-initiated

2. Very short term; incorporates few steps; essentially teacher-designed

3. Modest assessment and reflection

4. Few, if any, connections to the community

Characteristics of work that is MORE project-like:

1. Teacher/student negotiated with initiation by teachers

2. Moderate length; multiple steps; evolving process

3. Sequenced, but with numerous points of choice for students

4. Community resources brought in

5. An end-of-project assessment of quality and learning

Characteristics of work that is MOST project-like:

1. Teacher/student negotiated with initiation by students

2. Students and teachers plan and carry out sequence with all choices and decisions made by group

3. Project can take as long as it needs; evolves over time with group making decisions about process

4. Many community resources brought in; and the group reaches out to the community both for help and to provide service/presentation performance

5. Assessment is on-going and final/summative; focused on quality and substance of learning, of individuals and group; conducted by teacher and students as individuals and as a group

Whose Ideas Shape the Project?

This is a particularly vexing problem in the debate about project-based learning in any educational setting. Bernie Zubrowski, Director of "Design It! Engineering in After School Programs" at the Children's Museum in Boston and principle author of many materials aimed at guiding staff and students through complex and challenging engineering design experiences, chooses not to call the work he creates and promotes "project-based learning" (interview, 6/27/02). Instead he calls these experiences "guided engineering design"

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because the structure imposed by the teachers' determination of viable materials for the students inevitably limits their "free range." Yet, review of his materials suggests that other elements of these experiences are, in fact, quite "project-like," as the children work in small groups to design and build objects like balloon or rubber band powered cars which they then race and compare.

The teaching-artists at Shakespeare & Company in Lenox, MA work with high school students after-school to produce full productions of Shakespeare's plays. The students choose to participate, but do not have final authority (and, in fact, have very limited input) over which play will be produced, its casting, or the design of the rehearsal process. These decisions are in the hands of the very experienced teaching-artists. Again, like Zubrowski's design experiences, the production of these plays in Western Massachusetts have many of the qualities noted earlier of project-like work in that the students assume responsibility for most aspects of each production.

Others, like Tony Streit, formerly Director and Co-Founder of Street-Level Youth Media, argue that student involvement in the initiation and planning of a project is an essential element of the very successful and highly recognized video and film work they have done in Chicago. We maintain whether the teachers' or the students' ideas "count" most, is a question both of central interest and importance, but ultimately, only one element of what makes an educational experience "project-like."

Project-Based and Experiential Work Across the Pre-K to 12 Spectrum

Some qualities of project-like work are consistent across all the years of schooling from pre-K to 12. For example, we hope that all students at all ages become deeply engaged in their project work, have a great deal of fun, and work very hard in the process. Further, we expect projects to involve inquiry, design, making and doing. Across all ages, there is certainly a place for documenting and sharing the work and for engaging in self-assessment conversations, though these will undoubtedly take different forms as children get older. The social and collaborative nature of most projects is also necessary and appropriate for very young children and young adults.

Other aspects of project-based work may vary quite significantly. Most early childhood projects will take place in or near the classroom. As children get older, their projects may well take them further from the after-school center and into the community. In high school, the center may really be only a launching pad for work that takes place almost exclusively in the community or at an internship or work place. The length of a project is likely to vary considerably with younger and older children, as longer, more multi-step projects will develop with older children. This does not mean, however, that very young children cannot sustain focus and interest for longer periods than is often assumed.

The issue of out-of-school time for adolescents is an especially complex one. Finding ways to turn those hours into valuable learning time is even more challenging. And yet, having nowhere to go and no way to extend learning beyond the hours and walls of the high school is a dangerous situation for many urban adolescents. In the face of high stakes state assessments, schools and their community partners in Boston are increasingly offering MCAS tutoring in the after-school hours. Thus far, at the high school level, these services have not been well used. According to Kathi Mullin, Special Assistant to the Superintendent for High School Reform, this effort simply "didn't work" (interview, 7/17/02). Though there are doubtless many reasons for this failure, one cause may have been the exclusive focus on one style of learning, rather than integrating test preparation tutoring in the context of other social and educative – project-like – activities.

For the past decade what have been more successful for many Boston adolescents are internships arranged through Career Specialists, hired and coordinated by the Boston Private Industry Council, and placed in every high school. Whenever possible, these internships are connected to programs of study. For example, a student in a health careers pathway would be placed in a hospital. This year Boston started Rewarding Youth Achievement for students with good attendance records, grades, etc. including involvement with internships in community-based organizations. These models clearly require the bridging of school and after-school services and programs with experiences that incorporate many of the characteristics of project-based learning we identified earlier in this paper.

Also worth noting is the Boston Arts Academy (BAA). With rehearsals and other arts-based activities occurring daily, students often remain in the building for many hours after the official "school day" ends. This is probably why freshmen in this school do attend after-school tutoring, which BAA requires of any students who enter with low SAT-9 scores. Fenway High School, which shares a building with BAA, also began an after-school initiative this year with several community partners for young men of color.

In a recent survey of exemplary learning opportunities for adolescents conducted by Jobs for the Future, it was noted that some of the most effective programs essentially blend school and after-school. For example, in Providence, RI, Metropolitan Career and Technical Center, an internship-based alternative public high school known as "the Met" and currently being adopted as a model in nearly a dozen other communities around the U.S., places students in internships two days a week. In a sense this is both school and "after-school" time. Often, on the internship days, students will come back to the school at 3 or 4 o'clock to work on their internship project (a project decided upon by students with both work-mentor and teacher-advisor). The projects are worked on at the internship and also at school. Ultimately students present the work to a panel of school members and the public for school credit. In addition, the teacher-advisers at the Met try to make sure that each of their 14 advisees is involved in summer learning – whether taking a college course or doing something experiential such as Upward Bound. Considerable time and attention goes into raising funds for students to travel in the summer, so that they have the experience of being away from home (vital to first year adjustment in college). In these settings, a visitor would be hard pressed to tell "school" from "afterschool." Kids are engaged, they know what they are expected to do, and they have adults there to help them, whether at 9 in the morning or 5 at night.

Similarly, at special focus schools, like BAA described above, or High Tech High in San Diego, students expect at least a 9-5 day (not counting home-work!). At BAA, there are rehearsals and studio work. At HTH students stay on site after school hours to work in the animation lab, to take CISCO training courses, or to stay at their work-stations and work on projects.

Some programs, like Llano Grande Research Center in Elsa, Texas involve kids in particular courses during the school day linked to a "center" or series of activities in the after-school hours. Another case where students get school credit for work in after-school hours using 21st Century grants is Horizonte in Salt Lake City.

All of these programs reinforce the importance of authenticity to adolescents, who tend to vote with their feet. When they see something as mattering beyond the walls of the classroom, they are far more likely to engage in it. According to Tony Streit of Street-Level Youth Media, "Often kids in after-school have a greater option to walk so there is a greater need to keep their interest" (interview, 6/27/02). In Real Learning/Real Work, Steinberg answers the question: how real is real enough? by asserting that a project is "real enough" when kids can see a reason for it; when they have access to appropriate technology, tools, materials to actually execute it; when the work is taken seriously by adults; and when it emulates characteristics of high performance work organizations (Steinberg 1998).

Effective Project-Based and Experiential Learning Experiences Drawn from Across the Nation as Well as Boston

National

Among the programs we identified from across the nation which offer effective project-based or experiential learning experiences were: Tony Streit's Street-Level Youth Media in Chicago, which seeks to address the "very hard-to-measure social and emotional needs of kids who are dismissed by the schools as academically challenged" (interview, 6/27/02); Baltimore Clayworks, which offers quality educational arts experiences in after-school settings to elementary, middle school, and older teen youth from underserved areas of the city who might otherwise be unsupervised; and the Virtual Y After-School Program at P.S. 22 in New York City. In New York there is a strong initiative for systemic implementation of project-based learning, which can be seen in the Metro Center's pilot programs at P.S. 22, P.S. 138, P.S. 7, P.S. 84, P.S. 79, and C.E.S. 64. These pilot programs, whose efforts are being supported by NYU as well as by Harvard's PAER and Project Zero, and the Education Development Center, can be a significant resource as they underscore the potential for systematizing project-based or experiential learning experiences in Boston's after-schools.

A few of the programs we researched were based both in Boston and across the nation, and even - in the case of the Intel Computer Clubhouse (which has 15 clubhouses already established in the U.S. as well as in Europe, South America, and now China) – worldwide. The Computer Clubhouse is an after-school learning environment designed to give underserved youth the opportunity to explore their own interests and become confident learners through the use of technology. According to Director Gail Breslow, the students' projects are self-designed, involve multiple steps, foster product management skills (as the kids formulate an idea on their own and then define, develop, plan, and execute it), and are ultimately shared either in an art exhibit or by being put on the Web (interview, 6/21/02). The Clubhouse is a chaotic looking environment where lots of serendipitous learning occurs; it is intended to feel to its community of learners like an "artist's studio" or "inventor's garage" (interview, 6/21/02). The Computer Clubhouse Network is an excellent example of the potential for an isolated model of project-based learning to proliferate in a network of after-schools. Over the next 5 years, Intel plans to build 100 new Clubhouses around the world from Columbia to Arizona, and Israel to the Philippines.

Another program reaching youth both locally and nationally is "Design It! Engineering in After-School Programs," an effort, funded by the National Science Foundation, to introduce design engineering to young people. With the curriculum formulated by the Education Development Center, the "Design It!" program is collaborating with 6 science centers and with 6 organizations - 36 community agencies - across the country to explore problem solving through design engineering. According to Director Bernie Zubrowski, the curriculum is more project-based than "make and take", as the kids will spend 6-8 sessions on a complex and challenging activity such as building a balloon- or rubber band-powered car. Zubrowski terms these experiences "guided engineering design" rather than project-based, due to the partial structure imposed by the deliberate limitation of materials. According to Zubrowski, "part of the pedagogy is the very limitations…If you give kids carte blanche of what materials they can use to build a certain project, they will be overwhelmed. This should not be entirely up to the kids to decide. Here, we aim for an atmosphere of 'managed complexity'" (interview, 6/27/02).

Boston

Our research led us to several local after-school programs that offer learning experiences which can be described as project-based or experiential. Among those we examined in depth were: The Food Project, the EDC's "Design It! Engineering in After-School Programs", The Intel Computer Clubhouse at Boston's Museum of Science, Youthlearn at the Morino Institute, Expeditionary Learning Outward Bound, the Children's Museum, Citizen Schools, and The New England Aquarium as well as the YMCA of Greater Boston and Boys and Girls Clubs of Boston.

Boston's Food Project is an excellent example of experiential learning in the after-school. The Food Project takes inner city youth, primarily from Roxbury and Dorchester, and suburban youth, primarily from Lincoln, to work on farms and to grow, cook, serve, package, and sell or distribute for free the food that they harvest. According to Director Pat Gray, the learning that takes place is experiential rather than project-based, as most aspects of the program are "very structured and intentional. There is not a lot of opportunity for youth to add-on. When it's time to harvest the kids just can't decide to plant" (interview, 6/24/02).

The Food Project is a program that happens to hire young people. Because the work is not set up specifically for youth – it is on the same scale as if adults were going to do the growing, farming, selling, etc. – the young people "have the experience of learning what expectations are in an adult world and they gain a lot of confidence from that experience" (interview, 6/24/02). The youth and staff all get paid and are true partners in creating a goal; and the Food Project provides its kids with "ample opportunities to look at themselves and at their responsibility in achieving that goal" (interview, 6/24/02).

One local program with systemic elements is the Boys and Girls Clubs in Blue Hills, Charlestown, Chelsea and South Boston. David Alexander, Project Associate and Training & Curriculum Specialist at the National Institute on Out-of-School Time, led trainings for the program directors of BGCB in Taking Training Home: Supporting Program and Activity Implementation during Out-of-School Time as part of the Boston 4-Quality Initiative. Alexander cites the Boys and Girls Clubs as having great potential to reach the goals for excellence as articulated by their program coordinators. He attributes their potential to a "highly consistent staff", the strong leadership of Maureen O'Mara and Bob Monahan, and the "relatively decent

amount of technical assistance available to the staff" in their efforts to establish a project-based learning environment (interview, 7/30/02).

The example of the Boys and Girls Clubs, highlights some of the essential attributes of successful systemic efforts to support and nurture project-based learning in after-schools. These include:

- consistency of leadership and staff and consistency of commitment to creating project-based learning opportunities for participating young people,
- opportunities for all relevant staff to see and study models of project-based learning in other after-school settings and to work in an on-going fashion with people who have experience in developing and leading projects,
- access to relevant resource materials, including kits like the New England Aquarium's Aquatic Science Kits as well as planning guides and frameworks for developing projects,
- collaborative planning time for all staff that is part of regular work hours (even if those hours must be extended on a regular basis),
- opportunities to facilitate projects with other after-school staff and/or staff from collaborating partner organizations.

The only truly systemic initiative supporting project-like work in Boston's after-schools that we found in this study is the Children's Museum's initiative, beginning this year to distribute their CATS (Culture, Arts, Technology, and Science) Kits to every after-school program in Boston. With support from the Barr Foundation, this extensive effort offers these innovative, thematic, and very complete sets of materials (including teacher manuals, artifacts, activity cards, and storybooks) to any and all Boston after-schools, with training offered either at the museum or at the after-school site, and with subsidy for all of the related costs (including transportation and shipping of all materials).

The Qualities of Excellent Project-Based and Experiential Educators

One of the dangers of "unpacking" the features and qualities of something as complex as project-based learning is that this exercise can make it seem as though practitioners would have to be "supermen and women" to be successful. However, we have found excellence to be more associated with beliefs and attitudes than with particular training or skills.

Kevin Coleman, long-time Director of Education Programs for Shakespeare & Company, articulated a list of necessary qualities of artist-teachers who work for the company leading adolescents in producing plays by Shakespeare. Among the eleven qualities he identified were three that seem to stand for any kind of project work with young people. First, he thinks it essential that artist-teachers remember well what it was like to be the age of those young people they work with, what it was like to be in school, and that "they are infinitely interested in the students, and in creating a meaningful educational experience." Second, he argues that they must not "be intimidated by strong emotion and high energy." Finally, he notes that they must "have co-workers, co-directors, more experienced practitioners, and master teachers to learn from and consult with regularly" (Polin and Rabkin, eds., 1999).
(See Appendix F for complete list.)

To these we offer others, again drawn from our own experiences and from the interviews conducted in preparation for this paper:

- They like being with children.
- They have and enjoy making community connections.
- They don't have to have all the expertise but must be comfortable and resourceful in gathering expertise and other resources.
- They are comfortable with complex processes and can project confidence in outcomes that, at times, can seem dubious or even quite unlikely.
- They believe in the intellectual, social, moral, and aesthetic capabilities of the children they are working with and also believe that those children can learn what they need to learn in order to get the job done well.
- They have high expectations of quality and significance for the work of their groups.
- They work well collaboratively and enjoy working with other adults as much as with children.

Yet, even after-school staff with all of these qualities cannot work in isolation or in a vacuum. Any effective educator must have colleagues to work with, people who can help him or her understand the lives and needs of the children as a group and as individuals, people who can help bridge the school-to-after-school gap, and so on. Effective, thoughtful, long and short-term planning must be done by small teams or at least partners. The dynamics of the after-school staff and their ability to identify and hold focus on a set of learning goals is essential to their success. Leadership, educational expertise, and adequate resources are also essential and are certainly not to be assumed.

What After-School Practitioners Identify as the Resources and Assistance They Most Want as They Seek to Improve Their Work in this Area

Through our interviews and focus groups, we have identified several critical resources for assisting efforts to implement project-based and experiential learning in the after-schools. Not surprisingly, the resource named by our respondents as most urgently needed was **additional financial support**. Funding is necessary to address multiple staff concerns: most importantly, to provide training for staff members who have not been formally trained to work with young people in educational settings; to hire more facilitators to provide a broader base of support (multilingual, skill specialization, etc.); and to subsidize the time commitment, both on- and off-site, which a quality after-school program requires.

According to Tony Streit, Co-founder and former Director of Street-Level Youth Media, a level of **training** that goes beyond the development of child-relational skills is imperative, as "on-site coordination is less of a leadership issue and more of a planning issue. There is a real responsibility on the staff's part to plan and structure projects; and with the degree of intentionality in project-based learning, leaders must be able to articulate: 'this is what I want my kids to learn'" (interview, 6/27/02).

Bernie Zubrowski of "Design It!" at the Children's Museum is trying to get more science centers involved in his staff training; he believes that the participation of "more universities and schools of education would be very helpful to that end" (interview, 6/27/02), and he names the 4H Program as a great resource. According to Zubrowski, "in Boston specifically a lot of 21st

Century funds need to go towards training and not just directly into program materials" (interview, 6/27/02). However funding is also needed for program materials that are expensive, especially as they are often not reusable.

Due to expenses such as these, we heard a consistent need for **centralized resources.** Program coordinators in the Boston area want to share connections; they want to know who - which after-school and day-school programs, and which organizations and foundations - has resources (including free, cheap, shareable or pool-able supplies, space, transportation, or staff) that can be made available to other local after-school programs. Pat Gray's Food Project needs help with transportation in order to bring more kids across county lines as the land base available for farming in Boston is so minimal. As part of her commitment to breaking down racial and class barriers, Pat Gray wants the Food Project to have "as much integration as we can get, but we don't have kids coming from as many diverse areas as we would like" (interview, 6/24/02). Gray also wants a more integrated staff, as she believes that "the staff and board should represent the pool of kids they work with" (interview, 6/24/02). One source Gray suggests for a more integrated staff would be "to centralize all the people who work well in multicultural communities" (interview, 6/24/02). Ultimately, she identifies a lack of financing, training, and geographical challenges as comprehensive barriers to growth and to realizing the Food Project's program goals.

Nearly all of the after-school leaders expressed a desire for a more **concrete understanding** and definition of project-based and experiential learning; as well as access to more widespread and specific **information about curriculum** that is being implemented at other project-based after-schools across the country. One potential resource that could provide valuable information is a database cataloguing the after-schools nationwide whose curriculum includes project-based learning. Also, Gail Breslow, Director of the Intel Computer Clubhouse, said that the field of after-school would benefit greatly from "a concerted effort to develop forums for people to share 'best practices' and talk about their programs" (interview, 6/21/02). She identifies finding time for such a forum as yet another challenge, so she suggests having these forums on-line.

Another resource which Breslow believes would be invaluable to her field is research-oriented; she asks for **demonstrated results** that the kind of project-based learning that occurs in after-school settings is successful, the tools to help measure that success, and funding for this kind of evaluation work. Such demonstrated results would be useful to eradicate some of the stereotyping and misperceptions which trail project-based and experiential learning. According to Bernie Zubrowski, "there is a huge problem with perception when it comes to learning and what learning 'looks like' – as if openness in the classroom and standard-appropriate learning are mutually exclusive" (interview, 6/27/02). Zubrowski blames state-passed accountability for "the enormous political pressure on after-school to be more like school, with the high emphasis on literacy and numeracy and less on arts and intuitive-types of learning" (interview, 6/27/02). Zubrowski advocates "a strong differentiation between help with tutoring and after-school education, which is (or should be allowed to be) informal education…politicians and policy-makers need to be made aware that all kinds of learning is going on that is not recognizable through the lens of traditional in-school curricula" (interview, 6/27/02).

These findings are consistent with Project Zero's experience in a number of after-school projects. In short, when we look across our work in Boston, Texas, and New York City after-schools, we have seen that, in launching a project-based learning approach, perhaps the first and most important step is for the leadership of the after-school program to make clear that they consider projects an essential part of that center's offerings. They need to help staff see how it fits into the mission of the program and what the value of such learning can be. This clear and public commitment, along with the support needed to implement a project approach, pave the way for the challenging work of actually developing and carrying out projects in the program.

We have also noted that the capacity to use a project-based approach well in an after-school center has phases of development. In the initial stages of developing the capacity to design and lead projects, it is important to allow staff considerable flexibility and choice. They should be encouraged to design projects that reflect their interests and areas of comfort and expertise. For example, staff with comfort in and love for the arts might best start in that realm, while staff who love to take machines apart and put them back together might well create a small appliance repair project. And if these staff

members work together well, they could create an arts project using parts from appliances that were beyond repair.

Further, in the initial stages, staff should be encouraged to keep their first attempts with projects small and focused (a 2-3 day experience might be plenty to design initially). Finally, positive feedback about and celebration of small, early successes helps to build a climate in which staff will be willing to take on larger and more complex endeavors. Throughout the stages of developing a project-based learning approach, we have noted that it is critical for the after-school program leaders to remind staff that planning and leading projects is a skill set that takes time to develop and that projects that lose their focus or go awry are a normal and important part of developing those skills.

Local Resources for Building Excellence in This Arena

There are many local resources available for building excellence in this arena. These include: the Mayor Menino's Task Force and the Boston 2:00-to-6:00 After-School Initiative, the Education Development Center (EDC), The National Institute on Out-of-School Time (NIOST), Harvard's Program on Afterschool Education and Research (PAER), Harvard Project Zero (HPZ), "Classroom Connect", and The Education Research Center (TERC), as well as the numerous training manuals and publications listed in Appendix B, the websites listed in Appendix C, and videos listed in Appendix D. Boston also has wonderful cultural resources such as the Children's Museum, the Museum of Science, and the New England Aquarium, among many, many others.

Challenges

In this section, we take a sober view of the difficulties facing after-school staffs as they seek to implement project-based and experiential learning opportunities for their students. Our prior experiences and our recent interviews suggest that these challenges are considerable. We believe a thoughtful appraisal of the depth and breadth of these challenges is necessary in order to make any serious recommendations about ways to design policies and infrastructures that will really make a difference to this aspect of after-school programming.

Debates and Confusions

Despite a growing consensus that Boston children need educational opportunities in the after-school setting, there remains great uncertainty and considerable debate about how best to create those opportunities. As noted earlier, among those advocating for these educational opportunities, there remain questions about what should be taught and how it should be taught. Test preparation, tutoring, tying after-school curriculum to the school's curriculum frameworks, literacy and numeracy programs, projects and other models all vie for primacy. It seems unlikely that many individual centers will establish well-defined educational programs in the absence of greater unity and clarity across the city. The debate remains much too confusing for many after-school practitioners/facilitators and may well undermine their strongest instincts, since many do not feel themselves to be experienced and qualified educators.

Further undermining the development of strong project-based learning programs in after-schools is the general confusion many after-school staff have about just what is or isn't a project. As stated earlier, we feel it is important to try to steer this conversation away from "is or isn't" towards one in which work is seen as "less or more project-like." Clear articulations of the qualities of project-based learning experiences can, hopefully, help after-school staff see ways in which their work is project-like and, at the same time, suggest ways in which they can continually evolve and deepen their project work.

Finally, our limited study suggested that it is very hard for after-school staff to build an effective working alliance with the staffs and administrations of many of their host schools or the schools where most of their children spend the first part of the day. The poor communication that characterizes many of these relationships severely limits any sense of building an effective team effort to provide children with coherent learning experiences across the two settings or of complementing what happens (and does not happen) at one in the other. Many after-school staff believe teachers and administrators see them largely as untrained and unqualified and yet still responsible for providing academic services – an extremely uncomfortable position and hardly grounds for any level of collaboration.

Toward a Culture of Learning in After-School Settings

Starting from a Culture of Safety and Recreation

After-schools have the responsibility of creating a safe haven for children from 2:00 to 6:00. This is a major task and a large responsibility. Most after-schools go further and strive hard to create an environment that is fun and recreational. Establishing a culture of safety and fun requires considerable work and cultivation. Transforming that culture into a culture of learning is a far more complex task. As discussed earlier, many children come to after-school wanting a break from schoolwork. If the after-school is to create a culture of learning, the learning probably can't look too much like school-work or the kids aren't going to be very motivated. Combining student resistance to confusion over just what learning can and should look like in the after-school is probably enough to make even the most dedicated after-school staff wonder if "safety and fun" might not be enough to undertake. Obviously, the financial rewards of being an after-school staff member do not provide a powerful motivation to transform the culture and, in so doing, create more work for the staff.

Public Awareness

Transforming the culture of the after-school to one that places high value on creating powerful learning experiences for children is difficult enough within centers. But the task is not complete and perhaps cannot be completed until there is a broader public perception of the after-school as a learning environment, not just as a safe place for kids. Parents, community groups

and organizations, local officials and the school administrations must come to embrace a collective responsibility for supporting efforts to make the after-school an educational setting.

After-School Staff as Teachers

It is no secret that few after-school staff have any formal training as teachers or that few see themselves as official teachers. Quite the opposite, they are in the basements of school buildings or in community centers – not in classrooms, the spaces where teachers do their work. Most of these staff are reminded in many ways – from salary to messages from teachers and administrators to the expectations of parents – that they are not the children's educators. Changing this image in both the minds of these staff and the public is a major challenge and certainly key to creating the culture of learning discussed above.

Exacerbating this problem is the common assumption that, in order to make after-schools into environments for learning, there will have to be major training initiatives for after-school staff. This notion, while quite possibly true, feels built on a kind of "deficit model" – the after-school staff are not teachers and so need to be trained in the ways of teaching. Certainly there is much about learning and teaching for any after-school staff member to learn. But little of this notion assumes that after-school staff come with any significant strengths for this work.

In our experience with numerous after-school settings, we have seen over and over that many after-school staff have three qualities we consider essential to good teaching in any style, not only project-based work.

1. They like children and enjoy being with them.

2. They want children to have fun, get along well with adults and other children, and feel good about themselves.

3. They like doing things with children and, quite often, have good instincts about how to help children try things they've never done before and not give up until they've succeeded.

While these are far from fully adequate, they could certainly be considered "necessary, but not sufficient." Yet if we accept these as essential starting points for becoming an effective coach, facilitator, and/or project coordinator for children, staff who have these qualifications are well on their way to becoming effective teachers in the after-school setting.

The challenge is to create settings and experiences in which after-school staff can explore the role of teacher, building on their instincts and receiving both guidance and feedback. Specific experiences with project-based learning are needed, as well as experiences developing documentation of student work and learning. Indeed, a detailed list of valuable supports and resources would be quite lengthy. We are not prepared to create that list in this paper, though we believe a thoughtful analysis of the "what" and "how" of learning to become project-based educators in the after-school is a significant task that remains to be done.

In brief, individual centers and the network of centers across Boston face the major challenge of analyzing the task, designing models, and moving toward implementation of experiences and resources that will help the typical after-school staff, with their many strengths and excellent instincts for this work, to become fully capable and confident facilitators of project-based learning. This is not a simple process of conducting some training sessions. At the same time, a design can probably be developed that could help many after-school staff members feel much clearer and more confident about how to develop or further extend their current "project-like" work with children in a relatively short period of time.

The Challenge of Assessing Learning in Meaningful Ways During and After Projects, Including How to Make Assessment a Learning Experience for Students

The task of assessing what children are learning is, like it or not, unavoidable for and across the centers. While many after-school staff worry about yet another responsibility for which they may feel unprepared, the assessment of learning does not have to be an onerous or impossible task. Documenting project work and sharing that documentation with the children, their families and others in the community is always so appreciated by those with whom it is shared that it becomes immediately rewarding. It also serves to make the

work seem important to children who often then begin to take documented work more seriously. Even early efforts at documentation and assessment can serve the project work well.

It is important to note that we are not suggesting tests and grading here, but rather that after-school staff and children draw from some of the well-developed models of alternative assessments to capture and reflect on their work, making it visible to themselves and others. These forms of assessment may include creating exhibitions and performances, seeking expert evaluation of the quality of a project, and many types of formal and informal on-going feedback, self-assessment and reflection.

Moving from Isolated to Systemic

Many of the best examples of project-based work in after-schools are isolated situations in which a single staff member, a small group of staff, or some staff and community partners have designed and implemented excellent projects with their students. Finding examples of project-based work that is sustained over time in these centers and across the presence of specific staff is much more difficult. Ultimately, the development of a sustained culture of project work can only occur if the following issues are addressed:

- High turnover of after-school staff.
- Project work being valued by the center. Building a history of projects with very visible products and documentation can be a major step in building a sense of value for the work.
- Broad support for the idea of project work must be sustained within the city and across centers in order for the centers to feel fully validated in building the culture and curriculum of project-like work. Consistent city-wide support for project work must be communicated to the staffs of the centers.
- There must be methods for information about how and why to do projects to be passed along. Building knowledge and expertise both in individual centers and across the city is a long-term task. The subtlety and complexity of the realm of project-based learning makes this task especially challenging.

These challenges highlight the interrelationship of sustaining project-based work in individual centers and a committing systemically to building a culture of learning and project-like work in after-school settings. At this time, there seems to be little or nothing in the way of well-coordinated city-wide structures that are in a position to provide support and resources to individual centers on a consistent and long-term basis. The challenge for Boston is to design viable structures that can fill the multiple needs of individual centers, including the support for this kind of learning.

Recommendations

The challenges involved in moving Boston's after-school settings toward a culture of learning and a sustained curriculum of "project-like" experiences for children from 5 years to adolescence are formidable. They are conceptual – challenging the ways in which people think about the issue of learning in the after-school – and practical – involving many levels of design and implementation to create structures and supports that truly promote this work. These large goals will not be achieved quickly or easily. At the same time, we believe that shorter-range goals can be identified and achieved with important and promising results for children.

Recognizing that the concern for systemic responses to these challenges is at the heart of Boston's After-School for All Partnership's purpose in commissioning these papers, we identify some key areas for special attention in the coming 18-24 months. These areas begin to address the kinds of systemic supports that could help individual programs move toward a culture of learning with a project-based curriculum. These include creating city-wide resources for project ideas and materials, training, documentation of excellent project work across the city, and support for efforts to raise funds for specific projects as well as for expenses associated with program development in this area. We have also considered how a city-wide position on the place of project-based and experiential learning in the after-school might support after-school staff in sorting through curriculum and instruction debates and decisions and in explaining their choices to children, parents, schools, and the community.

In making these recommendations, we are quite aware that we make them from only one perspective on learning in the after-school hours. The other papers commissioned by Boston's After-School for All Partnership address other critical learning issues, such as the role of the arts and other cultural institutions in providing powerful learning experiences, literacy, technology, and the bridge between school and after-school. We recognize that any actions pursued by the Partnership must take all of these perspectives into account, seeking connections and intersections wherever possible. We have tried to take into account the recommendations made in the other papers, though our understandings of those recommendations is partial at best. If we have misinterpreted or in any way misrepresented those other recommendations in this paper, we apologize.

Further, the most valuable strategies, actions, and policies will certainly build on current structures and resources for supporting and nurturing the development of a culture of learning in Boston's after-schools. Unfortunately, our study only began to explore these structures and resources, so it is difficult for us to be as specific as we would like about the best partners for after-schools to engage with in pursuit of these goals. Finally, we do not know the extent of the Partnership's resources for this initiative, which makes our efforts to design recommendations somewhat perilous. We make the suggestions below recognizing that many could be well beyond the available resources, or even that we may not have gone far enough.

A number of recommendations from the authors of the other papers commissioned by the Partnership seem highly promising and worthy of serious consideration. Further, they seem to have considerable significance in relation to the concerns and goals described in this paper. Specifically, we note four of those ideas and suggest how they could relate to a project-based learning agenda:

- **A Center for the Support of Learning in Boston's After-Schools**
  The idea of a center to promote and support the advancement of learning in Boston's after-schools is a feature of the recommendations of a number of the papers commissioned by the Partnership. We support this idea and believe a center could play a major role in helping providers and the public focus on project-based learning as a goal for Boston's after-schools.

  This center should be home to education specialists (see bullet below)

who work with groups of after-schools and individual after-schools to help in the development of project-like work. There should also be a documentation specialist who will help after-schools across the city to record, analyze, assess, and "publish" their documentation of project-based learning in their programs. While each after-school should build a portfolio of their documentation, the city-wide "center" will also be building a catalogue of excellent projects and exemplary learning experiences. These will be both the source of public awareness campaigns and professional development, as both will aim to make visible the learning that is going on in the after-schools across the city.

The Center should have space for this documentation, which could form a kind of library as well as a standing exhibit of what after-schools and kids can do and learn.

As part of the staffing of the Center, there should be an Educational Coordinator, responsible for the use of the space and for support and training of the Educational Specialists. This person should have experience with project-based learning and will also work with local experts to gather and share knowledge and resources. She or he will coordinate a city-wide effort to provide long-term opportunities for after-school staff to develop the qualities and skills needed for effective project-based learning. This should be preceded by a careful and thorough process to design these experiences, with special attention to the complex problems of access, level, and goal setting. There are clearly many steps required in planning and design before implementation.

- **Education Specialists**

  As proposed by PAER in their presentation on "bridging school and after-school," the creation of a cadre of education specialists with responsibility for a range of tasks related to supporting, nurturing, and challenging after-school staffs as they evolve toward development of richer and more rigorous learning experiences is compelling and promising. Certainly, new roles will need to be developed if there is to be significant evolution in this direction. The field as it stands does not appear to have the expertise or resources to achieve these lofty goals. Among many other purposes, an education specialist, working with a small cluster of after-school programs, could provide steady coaching on the development of appropriate projects for those centers. These specialists could also serve as facilitators of

interaction and sharing among programs, helping each to learn from the experiences of the others.

Eventually Boston will need more of these Specialists, but initially a cadre of 3-5 may be best as the role is developed and becomes more established. We propose that each Education Specialist (ES) work with 3-5 after-school centers on the enrichment aspects of the center's programs generally and project-based learning in particular. Two goals mark the first two years of the ES's work: to develop the capacities of after-school staff and coordinators in these centers to design and implement project-based learning as well as to provide other forms of learning experiences to children (i.e. homework help, tutoring in particular academic areas, etc.); and, to document efforts and products of project-based experiences in these centers. To these ends, the ES will work both at the 3-5 identified centers and will also convene staff from those centers at group meetings. The ES will facilitate these sessions, focusing initially on project design and implementation issues and moving on to assessment and documentation. The ES will provide direct technical assistance for documentation, helping after-school staff collect the artifacts of the project (products, record of performances, etc.) and the materials that capture a record of the group's process (drafts of works-in-progress, photos, etc.).

- **Small Innovation Grants**

PAER also proposed the creation of a program of small innovation grants for after-schools engaged in creative efforts to solve problems or address particularly difficult issues in new ways. There could certainly be a category of these grants designed to provide support for efforts to design, implement, and publicize project work in specific after-schools. These grants might well support partnerships between arts and cultural institutions or other partners working on learning projects with particular after-schools. These grants could also encourage innovation in bridging project-based work with technology and/or the development of literacy and numeracy.

The budgets for these grants should, in most cases, be modest sums. The point is to encourage innovation, but not financial dependence.

- **Encouraging Partnerships for Learning**

  As noted in the argument above for small innovation grants, partnerships between individual after-school programs and cultural and community-based organizations can be a key to the design and implementation of project-based work. Indeed, these partner organizations can often provide the after-school programs with not only the material resources that are critical to specific projects, but also the content-knowledge and expertise that are essential to making project work an occasion for learning. The New England Aquarium and the Children's Museum have both created materials and training for after-school staffs and represent an important model of this kind of powerful partnership.

  Financial support for the partnerships can be, as noted above, crucial. It is also crucial that, as the after-school field moves toward a culture of learning, funders and other advocates of project work help keep learning the primary goal of the initiative. In other words, it is not enough to have an interesting idea about what young people might do with and through the auspices of the cultural or community-based institution. There need to be clear learning goals and clarity about how the proposed activities will provide the participating children with the experiences that will support that learning and achieve these goals.

A deeper and more public conversation about the role of projects in Boston's after-schools needs to emerge in the coming year. Under the auspices of the Partnership and framed in relation to other essential conversations, this conversation should aim to debate clearly the role and purpose of project work in the after-school hours, and to educate everyone about the nature of project-based learning, what young people gain from involvement in projects, and what it takes to implement this approach.

To that end, we suggest a number of settings in which project-based learning can be explored from different perspectives and by different participants. The Partnership could engage an intermediary organization to organize and structure these conversations over the next 12-18 months. If, in that time, 8-10 events (some smaller and more focused; others larger and more public) centered around the nature of learning in after-schools, in particular project-based learning, could take place and the proceedings of these sessions made public in an appropriate form, the Boston after-school community could move dramatically forward in its level of debate and conversation on these matters.

Convenings:

- **A Debate Among Educators:**

  Convene educators with a diverse set of perspectives on approaches to learning in after-schools. The purpose of these conversations is to explore the issue of how to "balance" approaches to learning in response to specific learning needs of particular centers. These conversations should also include educators from the fields of service learning, school-to-career, arts education, and other arenas that have project-like components, but may not identify themselves as "project-based."

- **An Experts Conversation:**

  Convene people with appropriate expertise to explore perspectives on strategies to promote project-based learning in after-schools. Discussion of this paper, "Learning Beyond School," "Fun Learning Matters," and the NIOST materials could, among other materials, provide a basis for discussion. This could be a short-term effort designed to help refine a perspective and framework for Boston's efforts to move learning in after-schools in the project direction.

- **A Providers Conversation:**

  Convene a small group of centers with a history of implementing project-like work and/or demonstrated interest in moving in that direction to explore formation of a network with activities, information, and resources designed to nurture that effort. This conversation could begin in person, but continue on-line. A data-base of providers engaged in project-based learning could also be developed from these conversations.

These convenings should be coordinated with a public conversation about the role of learning in the after-school. To this end, we suggest a number of public awareness initiatives that could substantially enhance the impact of the convenings and advance the cause of project-based learning in Boston.

Publications/Public Awareness:

- Establish a small publication (actual and virtual, if possible) on project-like work in after-school settings with a special focus on local efforts written for (and by) after-school providers. Examples from across the nation could also be featured. This publication should address concerns of after-school staff who are interested in, but wary about, project-based learning and should suggest ways others have found to address those concerns. This publication could more simply be a section in a larger publication dealing with other issues of after-school work in Boston.
- High visibility materials, such as videos, public service announcements, and brochures or short publications in multiple languages, designed for a broader public aimed at showing images and examples of project-like learning in after-school settings. These should feature the engagement of young people and, in their words and from the perspectives of adults, the benefits of these learning experiences.

Resource Development:

- Coordinate a city-wide effort to provide resources (from materials to special expertise to financial support) for project-like work. Of course, establishing this kind of effort can only follow a much more detailed assessment of needs and current availability of resources. Again, a data-base of after-school providers who engage in project-based learning as well as potential partners in the community who can support and collaborate in those efforts could be highly valuable.

Areas for Further Study:

- Additional research and development of many aspects of project-like work in Boston after-schools, including, for example, best practices in staff development, creating effective spaces, environments, and curriculum design, and the role of informal and formal partnerships. Considerable research and development work is also needed in the area of documentation and assessment, especially in relation to how after-school staff can conduct those processes.
- Specific investigations into the school/after-school connection for high school students is needed. The role of project-based work in this context needs to be better understood in relation to adolescents' interests and social, vocational, and academic needs.

- Phone interviews with a small number of selected systemic initiatives from around the country with demonstrated success in supporting project-based work across a district, town, or city.

The recommendations listed above are relatively short-term and, if considered within the context of other city-wide development plans for after-schools, could be undertaken in the near future. The long-term effort of building a culture of learning around projects in after-schools across Boston is a task for the next decade. Consideration of a ten-year plan, with significant benchmarks identified along the way, is perhaps the most important immediate task for this work. Our research suggests that there is, in Boston, considerable experience and expertise in members of the regular school and after-school communities and that it should be possible to find excellent participants in this kind of long-term planning process. This effort should include representatives of many communities and diverse perspectives, all of whom come together around the goal of creating a culture of serious learning in after-schools.

Final Thought

We offer the notion of the "center" as a modest suggestion of one strategy Boston could use to nurture a city-wide culture of learning in after-schools. In fact, it will probably take many more resources as well as a set of powerful champions to realize this important goal. This does seem a very promising moment for significant developments in Boston's after-schools. David Perkins, former Co-director of Project Zero and Professor of Education at the Harvard Graduate School of Education, argues that significant large-scale innovation and reform efforts require three kinds of "visionaries:" conceptual, practical, and political. In this situation, the Partnership clearly provides political vision. The commissioning of these papers suggests an effort to develop a conceptual vision and even to develop a cadre of conceptual leaders. Identifying the practical visionaries, the on-the-ground visionaries who appreciate political realities, understand conceptual goals and frameworks, and can make things happen by bringing all of the players and elements together, may be the next task.

Finally, we recognize that the recommendations we make, even if they have intrinsic value, may not emerge as most feasible or highest priority for the Partnership at this time. We sincerely hope that increasing and deepening the level of project-based learning opportunities in Boston's after-schools remains a serious goal, even if it is not the starting point or centerpiece of the Partnership's efforts in the coming months. We look forward to working with others to explore the feasibility of these recommendations as part of the larger effort to develop Boston's after schools into wonderful learning environments for its young people.

Appendix A - Interviewees

1. **Gail Breslow**, Director of The Computer Clubhouse Network at the Museum of Science, Boston; 617-589-0387, *www.computerclubhouse.org* telephone interview on 6/21/02

2. **Pat Gray**, Director of The Food Project; 781-259-8621 x 15; telephone interview on 6/24/02

3. **Bernie Zubrowski**, Director of "Design It! Engineering in After-School Programs" at Boston's Children's Museum; 617-969-7100 x 2573; telephone interview on 6/28/02

4. **Steven Levy**, Consultant for Expeditionary Learning Outward Bound; 617-576-1260 x 11, *Steven_Levy@elob.org*; interviewed in person on 6/28/02

5. **Kathy Mullin**, Special Assistant to the Superintendent for High School Reform; telephone interview on 7/17/02

6. **David Alexander**, Training and Curriculum Specialist at the National Institute on Out-of-School Time; 781-283-3358, *dalexand@wellesley.edu*; interviewed in person on 7/30/02

7. **Beth M. Miller**, Ph.D., Consulting Partner, Miller Midzik Research Associates and Senior Research Advisor, NIOST; 617-739-3624, *bmiller@wellesley.edu*; telephone interview on 8/07/02

8. **Julie Crump**, Director of Programming at the New England Aquarium; 617-973-0253; telephone interview on 8/19/02

9. **Bob Monahan**, Maureen O'Mara, and Melissa Coffee of the Boys and Girls Clubs of Boston; 617-994-4713, *rmonahan@BGCB.org*; interviewed in person on 8/21/02

10. **Ned Rimer**, Co-founder and Director of Citizen Schools; 617-695-2300 x 100, *nedrimer@citizenschools.org*; telephone interview on 8/28/02

11. **Ginny Zanger**, Vice President of the Harcourt Teachers Leadership Center at the Boston Children's Museum; 617-426-8855 x 284; telephone interview on 9/11/02

12. **Juliana Brownrigg**, Kits Manager at the Boston Children's Museum; 617-426-6500 x 231; telephone interview on 9/12/02

Appendix B – Publications

1. Katz, L. & Chard, S. (2000). Engaging Children's Minds: The Project Approach. Stamford, CT: Ablex Publishing Corporation. Forward by Lane, M.

2. Goodrich, H., Hatch, T., Wiatrowski, G., Unger, C. (1995). Teaching Through Projects. Reading, MA: Innovative Learning Publications, Addison-Wesley Publishing Company.

3. Lagemann, E.C. (2000). An Elusive Science: The Troubling History of Education Research. Chicago, IL & London, England: The University of Chicago Press.

4. Gardner, H. (1983). Frames of Mind (10th ed.). New York, NY: Basic Books, Perseus Books, L.L.C..

5. Reggio Children & Project Zero (2001). Making Learning Visible: Children as Individual and Group Learners. Reggio Emilia, Italy: Reggio Children srl.

6. Committee on Community–Level Programs for Youth (2002). Community Programs to Promote Youth Development (J. Eccles & J.A. Gootman, Eds.). Washington, DC: National Academy Press.

7. Noam, G., Biancarosa, G., & Dechausay, N. (2002). Learning Beyond School : Developing the field of afterschool education. Unpublished manuscript: Harvard Program in Afterschool Education and Research.

8. Blythe, T. Boyd, J., & Wilson, D. (2002). Fun Learning Matters! A guide to doing projects in afterschool programs. Unpublished manuscript in press: The After-School Corporation, Harvard Program in Afterschool Education and Research, and Harvard Project Zero.

9. Steinberg, A. (1998). Real Learning, Real Work: School-to-work as high school reform. New York, NY: Routledge.

10. Fiske, E.B., Ed. (1999). Champions of Change: The Impact of the Arts on Learning. Washington, DC: The Arts Education Partnership.

11. Morino Institute (2001). The YouthLearn Guide: A creative approach to working with youth and technology. Education Development Center, Inc.

12. Southern Regional Education Board (1999). SREB High Schools That Work - Site Development Guide #11: Using real-world projects to help students meet high standards in education and the workplace. Atlanta, GA: SREB.

13. Levy, S. (1996). Starting From Scratch: One classroom builds its own curriculum. Portsmouth, NH: Heinemann.

14. Blythe, T. & Hatch, T. (1995). More than a Place a Go. Working paper. Project Zero, Harvard Graduate School of Education, Cambridge, MA.

Appendix C - Websites

1. *http://www.pblmm.k12.ca.us/*

2. *http://www.bie.org/pbl/overview/index.html*

3. *http://www.bie.org/pbl/*

4. *http://www.iearn-canada.org/guideontheside.html*

5. *http://www.hebes.mdx.ac.uk/teaching/Research/PEPBL/*

6. *http://www.niost.org*

7. *http://www.youthlearn.org*

8. *http://www.elob.org*

9. *http://www.sreb.org*

10. *http://www.computerclubhouse.org*

11. *http://www.citizenschools.org*

Appendix D – Videos

1. "Links to Learning"; length 15 minutes, (copyright NIOST, 2002).

2. "Making the MOST of Out-of-School Time: The Human Side of Quality"; length 11 minutes, (copyright NIOST, 1998).

3. "Atlas Communities: The Voyage of Pilgrims"; length 55:55 minutes (copyright NASDC, 1995).

Appendix E – Participants Registered for Project Zero Led Focus Group

for Making it Real: Learning in Out-of-School Time Conference on 6/5/02:

Alliance for Inclusion & Prevention	Jennifer Burke
BAHEC	Mike Davis
Blue Hill Boys & Girls Club	Yvette Proenza
Boston Area Health	Carleen Maxwell
Boston Community Centers	Deirde D. Bowling
Boston Schoolyard Funders	Kirk Meyer
Boston Urban Youth	Shelley Gumbs
Central YMCA	Becky Gianfonte
Central YMCA	Kelly McMorrow
Concilio Hispano Inc.	Antoinette Basualdo
CORNU Management	Wanda Torres
EDC	Monica Biswas
Historic Neighborhoods	Byron Beaman
Historic Neighborhoods	Liz Kosturko
Horizons for Youth	James Barnett
Massachusetts 2020	David Farbman
MetroLacrosse	Paige Brewster
MetroLacrosse	Alex Levering
Museum of Science	Linda Jung
Museum of Science	Sean O'Brien
MYTOWN	Kim Alleyne
New England Aquarium	Julio Vargas
Patriots' Trail Girl Scouts	Jayms Battaglia
Prevention NOW!	Beatriz Gheridian
Suskind Young at Arts	Sarah Stoll
Taylor Community Learning Center	Markita Durant
Tenacity	Chris Wolfe
Urban Ecology Institute	Katy Chamberlain
VSA-Massachusetts	Nathalie Miebach
Whittier Street Health Center	Mary Alexandre
YMCA of Greater Boston	Sarah Nathans
Young Audiences of Massachusetts	Kali R.Walker

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Appendix F – Shakespeare & Company List of Qualities for Artists/Teachers

What are the Qualities of the Artist/Teachers for Shakespeare & Company?

1. They are all artists.

2. They share a common aesthetic – a common body of knowledge about Shakespeare and the related disciplines necessary to perform his works.

3. They have a good working knowledge and abiding curiosity about the plays.

4. They have a proven progression within the rehearsal process that they follow, or around which they improvise; in turn, this progression gives form and depth to their activities.

5. They have co-workers, co-directors, more experienced practitioners, and master teachers to learn from and consult with regularly.

6. They are not intimidated by strong emotion and high energy.

7. They are infinitely interested in the students, and in creating a meaningful educational experience, and are committed to the goals of the program.

8. They challenge themselves as they challenge their students; and specifically for the artist-teachers in schools, their students see them performing or directing during the summer season at Shakespeare & Company. They succeed and fail in public.

9. They develop strong relationships with the school administrators, teachers, and parents.

10. They have access to "experts" – fight directors, technical directors, sound, light, and costume designers, and dance instructors.

11. They remember what it was like to be in high school.

12. They are in the schools for a limited period of time for a special project.

Developed by Kevin Coleman, Shakespeare & Company.

Appendix G - A Developing Field of Work

From Kirkpatrick's early work in 1918 until the present, individual and small groups of educators have experimented with and advocated for project-based learning, but, not surprisingly, these efforts have not yet led to wide-spread adoption of project-based learning in schools. Interest in this strategy has waxed and waned. For example, as recently as the early 1990's, the popularity of such ideas as multiple intelligences and portfolio assessment led to growing interest and higher profile for projects. This period included the creation of the Autodesk Foundation for the promotion of project-based curriculum in schools at every level. Even though the Foundation has been closed by its benefactors, a national conference on project-based learning continues today under the auspices of Connect Schools, a New American Schools design model. This was followed by a period of standards-based reform and increased testing, which once again pushed project-based work in schools to the margins. Today, as drop-out rates rise, there are once again significant examples of initiatives, particularly in the context of more recent high school reform efforts, that have school-wide or even systemic characteristics, but these are hardly dominating the new educational landscape.

One might expect to find more project-based learning in the context of after-school settings. Insofar as projects offer an approach to structuring active learning experiences for children, the after-school seems like a natural setting for this type of learning. Indeed, a fistful of high quality youth programs across the country make very effective use of project-based and experiential educational principles-- from national organizations such as Outward Bound to homegrown programs such as Chicago's Street-Level Video, The Food Project in Boston, and New York City's Education Video Center. These isolated examples tend to be community-based and special focus programs designed to attract adolescents, rather than all-purpose after-school for younger age groups.

Indeed, our research suggests that few after-school programs, at least in the Boston area, are substantially structured around project-based learning. Indeed, in Learning Beyond School, Gil Noam and his associates wrote, "It is worth noting here, however, that we found almost no programs in Boston and Cambridge that engaged in project-based learning in the way we will describe. Many considered themselves to be doing "projects" defined

usually as "product-oriented activity," but the components of sustained engagement, meaningful output, and child-centeredness were often lacking" (43). Even fewer systemic programs or structures exist that support city-wide implementation of project-based work in after-school hours.

For over a decade, Project Zero has been involved in explicit efforts to explore the role of project-based learning in after-school settings. In the early 1990's, PZ researchers worked with teachers and after-school staff at the Mather School in Boston (Goodrich et al, 1995). From 1996 to 1997, Project Zero engaged in a collaboration with the Texas-based Interfaith Alliance Schools Network to examine how after-school programs could develop richer learning environments. In the paper More than a Place to Go researchers, Tina Blythe and Tom Hatch, address how logistical management can support project-based experiences. More recently, PZ researchers worked with PAER (Programs in Afterschool Education and Research) and TASC (The Afterschool Corporation) in New York City to design training and materials for design and implementation of project work in New York after-schools. This body of work has supported both our belief that project work is possible and beneficial in after-school settings, but also fraught with challenges and impediments.

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